On Risk Management of Supply Chain Finance in Commercial Banks

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Abstract: With the change of economic environment, every bank in our country has begun to carry on the innovation reform of financial model, the bank competition becomes more and more intense. In particular, the commercial banking system attaches more importance to the innovation and development of financial models, and innovative financial models have become an important way for major banks to seize the market. At present, some banks have created new credit models, formed a new supply chain credit financial system by making full use of the content of customer data information database, in order to solve the financing difficulties of small and medium-sized micro enterprises, and further promote the reform of the financial supply side. However, because this kind of financing method has certain limitations, it will inevitably be accompanied by corresponding risks when it is implemented. This paper mainly discusses the risk management of supply chain finance in commercial banks.

***Keywords*:** commercial bank, supply chain finance, risk management

1. Introduction

With the rapid growth of social economy, accompanied by the increasingly complex market competition environment, in this case, the supply chain credit financial model has become the first choice of most commercial banks. This type of credit has the advantages of low threshold, simplicity and easy operation, and plays an important role in solving the financing difficulties of small, medium and micro enterprises and promoting the development of small, medium and micro enterprises. Due to the large number of participants and various forms of financing, commercial banks can ensure the effective implementation of this model only by doing a good job of risk control.

2. Risks of supply chain finance in commercial banks

Commercial banks supply chain related risks are mainly divided into legal risk, credit risk, operational risk and market risk. Supply chain finance business is mainly supported by information technology, which is more in line with the needs of enterprise modernization. Compared with the previous single-subject credit business, this kind of business has a short launch time, has not yet formed standardized management norms, and has no small legal risks in the promotion of business, mainly involving credit bundling, goods supervision, asset output value and other aspects. The lack of adequate and perfect legal protection of supply chain finance further increases the legal risks of this kind of business and affects the normal operation of this kind of financial business. There is more than one credit granting body of supply chain finance. In the supply chain, every participant can enjoy relevant financing services, and such diversified participants will also lead to the increase of credit risk. In recent years, although small and medium-sized enterprises in our country have achieved great development, there are still problems such as unknown information, insufficient qualification and low quality of financial management, which restrict the development of financing and increase credit risk [1]. Most small and medium-sized enterprises have small asset scale, lack of advanced technology, and fail to adhere to their own credit management, resulting in low credit qualification of enterprises, unable to smoothly obtain credit services from commercial banks. Third, when commercial banks provide financing services, they fail to carry out unified management of the credit and capital security of enterprises with financing needs in the supply chain. As a result, the risk management chain of commercial banks is expanded, and the risks in other aspects are also increased, which requires commercial banks to spend more effort in risk control, complicating the operation process, and even leading to operational costs far exceeding credit profits. The Internet of Things and big data technologies have promoted the development of the supply chain, making it widely used in various industries, and further increasing the number of participants in the supply chain. As the number of entities increases and the quality of entities varies, some enterprises may upload false information during certification, which will also increase operational risks. Finally, there are risks in the repayment of credit. As the market changes, the sales plan that has been developed before the production of the enterprise will be adjusted accordingly, so that it is often unable to complete the sale of the product within the planned time. The reasons include the failure of enterprises to accurately judge the market, and with the development of production technology, the original products are replaced by new products and face elimination, which affects the original sales plan. Once a problem occurs in the sales link, it will lead to a serious funding gap, and it is difficult for enterprises to repay the loan within the specified time. If the bank credit business object, a number of enterprises have such a situation, it will bring huge capital risk to the bank.

3. Supply chain finance risk management of commercial banks

3.1 Improve the supply chain finance environment

The external environment of supply chain finance mainly includes two aspects: law and information technology, which can play an important role in the development of supply chain finance. A good legal environment can prevent the negative effects caused by legal defects or inadequate supervision of supply chain finance activities, and also protect the interests of creditors, so that creditors can always occupy a favorable position in supply chain finance. In terms of the current legal environment, laws and regulations related to supply chain finance are still not sound enough, and the operability of such financial activities is not strong. It is necessary to continuously improve the legal environment in order to effectively promote the process of risk management of supply chain finance. Advanced information technology is an important support for supply chain finance, which can directly affect the level of financial services and product quality [2], as well as the accuracy of risk analysis results of commercial firms. With the development of related businesses, in addition to the rigorous and scientific work of business personnel, the reasonable application of financial information technology also has a decisive impact on the level of risk assessment. Before carrying out supply chain finance business, commercial banks should fully analyze the complex risk assessment results according to information technology to make them more accurate and targeted, and provide strong technical support for the development of supply chain finance.

The improvement of the external environment of supply chain finance mainly involves the perfection of laws and regulations and the application of information technology, aiming at providing a sound and efficient operating environment for supply chain finance. The sound legal environment not only prevents the risks caused by the lack of supervision or legal loopholes, but also ensures that the interests of creditors are protected. At the same time, information technology, as an important pillar of supply chain finance, has greatly improved the efficiency and quality of financial services, especially in risk assessment and management. For example, by applying the Altman Z-Score model:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

Banks can effectively assess the financial stability and bankruptcy risk of cooperative enterprises to determine credit strategies more accurately.

3.2 Optimize supply chain financial risk management

There are many enterprises and businesses involved in supply chain finance, and the links between enterprises are chaotic. Commercial banks should establish a scientific and effective supply chain finance business system, carefully divide customer market information, and carry out corresponding risk assessment to improve the accuracy of risk judgment. The construction of supply chain finance business system, risk assessment and enterprise investigation are inseparable from high-level professional and technical personnel. Therefore, businesses should actively train supply chain financial and technical personnel with strong professional ability to manage supply chain, conduct risk assessment and vigorously develop supply chain business system. In order to clearly and scientifically manage the enterprises involved in the financial business. Secondly, commercial banks should refine the internal division of labor, strengthen risk control, and improve the construction of risk control system to reduce the operational risks of supply chain finance as much as possible. In strengthening internal risk control, commercial banks should establish a perfect internal control system, scientifically use human resources, and set up a specific business team for risk control. Formulate clear work plans and contents, regularly conduct financial skills training for professionals, improve their professional ability and operational risk control ability, avoid human error, and improve risk management efficiency. It can be seen that commercial banks should base on the construction of core strength, strive to train financial technical talents, improve internal control system, and optimize supply chain financial risk management.

For many enterprises and complex businesses included in supply chain finance, banks need to establish a scientific and effective business system to accurately classify customer information and assess risks, so as to improve the effectiveness and accuracy of risk management. In doing so, Markowitz's modern portfolio theory:

$$\sigma p=\sqrt{\sum(i=1)^{n}\sum(j=1)^{n}w_{i}w_{j}\sigma_{i}\sigma_{j}\rho_{ij}}$$

It can be used as the theoretical basis for building a risk diversified portfolio and help banks achieve the optimal balance between risk and return in the field of supply chain finance. Meanwhile, through linear regression analysis:

$$Y=\beta_0+\beta_1X_1+\beta_2X_2+\cdots+\beta_nX_n+\varepsilon$$

Banks can conduct quantitative model analysis on the relationship between different risk factors and supply chain finance performance to predict and evaluate potential risks.

3.3 Improve the supply chain financial risk supervision system

As mentioned above, supply chain finance involves a large number of enterprises, which increases the complexity of risk management, which requires commercial banks to improve access standards, timely investigation of supply chain related enterprises, and establish a sound supervision system. Any enterprise in supply chain finance may experience boom and recession stages, and it is necessary for commercial firms to accurately judge financial risks in combination with the market and the actual situation of enterprises. Enterprises in the recession stage will increase the management risk of supply chain finance, which is unfavorable to the profits of commercial firms [3]. On the basis of accurately judging the risks, the commercial bank should identify the enterprises suitable for exit financing, so as to reduce the financial risks increased due to the recession of enterprises. Before allowing enterprises to obtain financing, commercial banks should put forward access requirements in terms of business conditions, capabilities and other aspects, and formulate scientific access mechanisms to prevent financial risks caused by enterprise credit, operation and other factors. Secondly, after the issuance of supply loans, businesses should also continue to follow up the operation of enterprises and establish a corresponding risk early warning mechanism to prevent financial risks caused by poor business operations and reduced repayment ability as far as possible. According to different types of supply chain finance, business firms should set corresponding risk early warning values, make risk prediction, and formulate coping strategies in advance. For example, the establishment of early warning in the form of enterprise operation and guarantee will increase the pertinence of risk early warning. In addition, the commercial bank should also adopt a scientific risk control mode, handle risk events timely and properly according to the pre-made emergency plan, and track the business status of the enterprise in real time, form a certain degree of constraints in the business operation, and prevent the occurrence of financial risks as much as possible. Therefore, commercial banks should control enterprise access standards according to market conditions, improve the supply chain risk supervision system and early warning mechanism, and better prevent financial risks.

Considering the complexity of supply chain finance and the diversity of participating enterprises, it is particularly important to establish and improve the risk supervision system. In this link, the VaR (Value at Risk) model:

$$VaR\alpha=-(\mu-z\alpha\sigma)$$

It provides an effective risk quantification tool that enables banks to estimate the maximum financial loss they are likely to suffer at a given confidence level. In addition, the use of scientific risk control mode and timely adjustment of risk monitoring strategy and early warning system will further enhance the management and control ability of supply chain financial risks.

4. Conclusion

In short, in recent years, the improvement of supply chain finance indicates that the financial model has become an important part of the financial business of commercial banks. However, in the actual implementation, there are still many risks in supply chain finance. It is necessary for commercial banks to fully understand the relevant risks and their causes, and not strengthen the management of supply chain finance risks by improving the supply chain finance environment, optimizing the supply chain finance risk management and improving the supply chain finance risk supervision system, so as to promote the good development of supply chain finance in our country.

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